

# Unit 1: Essential Skills with Numbers

Name: \_\_\_\_\_

Fill in the place value for each digit.

|   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|
|   |   |   |   |   |   |   |   |   |   |
| 7 | 8 | 4 | 0 | 1 | ● | 8 | 3 | 4 | 5 |

1. Round.

- (a) 223 to the nearest ten \_\_\_\_\_
- (b) 4851 to the nearest hundred \_\_\_\_\_
- (c) 102 480 to the nearest thousand \_\_\_\_\_
- (d) 12.351 to the nearest hundredth \_\_\_\_\_
- (e) 0.00186 to the nearest ten thousandth \_\_\_\_\_

2. Write the number for:

- a) six million, twenty thousand, seven hundred nine and two hundred three hundred thousandths. \_\_\_\_\_
- b) seventy five hundredths \_\_\_\_\_
- c) two hundred three and three hundred fifty two ten thousandths \_\_\_\_\_

3. Write the number in words:

- a) 2401\_\_\_\_\_
- b) 52.004\_\_\_\_\_
- c) 30700.00428\_\_\_\_\_

4. Evaluate

$$12 \div 2 + 1 \times 5$$

$$24 \div 2 - 3(2 + 1)$$

5. Arrange the numbers from least to greatest:

22.025

2.052

2.2025

220.25

2.5022

6. The total cost for groceries at a supermarket for 3 different families are listed.

\$62.31

\$65.52

\$58.02

- a) Which family spent the most?
- b) How much did they spend all together?
- c) The family that had the largest bill spent how much more than the family with the smallest bill?
- d) If the family that spent the least, spent the same amount every week, how much would they spend in a month?

7. Calculate.

(a)  $7.3 + 0.12 + 9$

(b)  $12.6 - 8.9$

(c)  $118.72 - 43.15 + 29.7$

(d)  $826.8 + 39.79 - 11.46$

8. Mandy goes to watch a hockey game knowing that transportation will be \$3.75, admission will be \$25.75, and a program will be \$5.00. If she takes \$45 with her, how much will she have left to spend on snacks?

9. Calculate (using the short cuts for working with powers of 10)

(a)  $23.151 \times 100$

(e)  $21.07 \times 100$

(b)  $8.7 \times 1000$

(f)  $248 \div 10$

(c)  $116.3 \div 10$

(g)  $1.728 \times 1000$

(d)  $8950.45 \div 1000$

$8950.45 \times 1000006 \div 100$

10. Circle the correct answer for each question.

a)  $24.2 \times 0.7$

1694

169.4

16.94

1.694

b)  $0.13 \times 4.02$

5226

5.226

52.26

5.226

0.5226

11. Calculate

|                   | Easier question | answer |
|-------------------|-----------------|--------|
| $2.3 \times 1.5$  |                 |        |
| $1.6 \times 0.02$ |                 |        |
| $27.8 \div 0.04$  |                 |        |
| $50.43 \div 4.1$  |                 |        |

## FRACTIONS

1. Write the factors of 36. (*which numbers skip count to 36*)

2. Write the multiples of each of the following:

(a) 3 \_\_\_\_\_

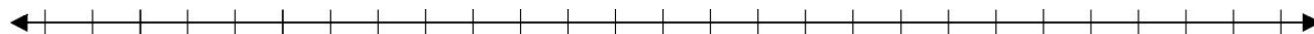
(b) 5 \_\_\_\_\_

3. Draw a model for each fraction and identify where it is located on the number line.

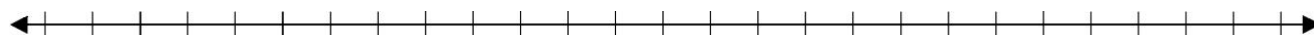
a)  $\frac{3}{4}$



b)  $\frac{5}{9}$



c)  $1\frac{2}{3}$



4. Find each missing term.

(a)  $\frac{3}{8} = \frac{?}{32}$  \_\_\_\_\_

b)  $\frac{5}{9} = \frac{15}{?}$  \_\_\_\_\_

5. Write 5 equivalent fractions for each fraction.

a)  $\frac{2}{5} =$

b)  $\frac{7}{10} =$

6. Compare the following fractions using  $>$   $<$  or  $=$  . Show how you know which is larger.

a)  $\frac{5}{6}$  \_\_\_\_\_  $\frac{4}{6}$

b)  $\frac{1}{2}$  \_\_\_\_\_  $\frac{5}{8}$

c)  $\frac{10}{18}$  \_\_\_\_\_  $\frac{4}{6}$

7. Write the fractions in order from least to greatest. Show or explain how you figured out the order.

(a)  $\frac{1}{4}$ ,  $\frac{1}{3}$ ,  $\frac{1}{8}$

(b)  $\frac{2}{3}$ ,  $\frac{3}{5}$ ,  $\frac{5}{8}$

6. Express each fraction as a decimal.

(a)  $\frac{3}{5}$  \_\_\_\_\_

(b)  $\frac{1}{8}$  \_\_\_\_\_

(c)  $1\frac{1}{3}$  \_\_\_\_\_

7. Write each decimal as a fraction.

(a) 0.3 \_\_\_\_\_

(b) 0.254 \_\_\_\_\_

(c) 3.16 \_\_\_\_\_

8. Model each fraction **and** then convert each mixed fraction to an improper fraction.

a)  $1\frac{1}{2}$

b)  $3\frac{4}{5}$

c)  $5\frac{2}{3}$

9. Model each fraction **and** then convert each improper fraction to a mixed fraction.

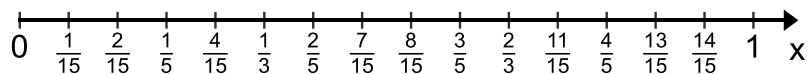
a)  $\frac{5}{3}$

b)  $\frac{16}{5}$

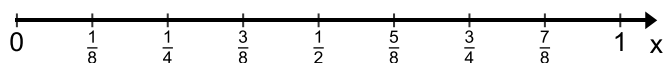
c)  $\frac{22}{9}$

10. Model and calculate.

(a)  $\frac{2}{15} + \frac{1}{15} = \underline{\hspace{2cm}}$



b)  $\frac{7}{8} - \frac{5}{8} = \underline{\hspace{2cm}}$



11. Calculate.

(a)  $\frac{1}{2} + \frac{3}{8}$

(b)  $\frac{3}{5} - \frac{1}{7} =$

(c)  $1\frac{1}{4} + 1\frac{1}{5}$

(d)  $2\frac{1}{6} - 1\frac{3}{4} =$

12. At the movies, Tony ate  $\frac{1}{5}$  of the container of popcorn, Leroy ate  $\frac{1}{3}$  and Joya ate the rest.

(a) Who ate more of the popcorn, Leroy or Tony?

(b) What fraction of the popcorn did Joya eat?

13. Model the product.

$\frac{3}{4} \times \frac{2}{3} =$



13. Find each product.

(a)  $\frac{3}{5} \times \frac{2}{9}$  \_\_\_\_\_

(b)  $\frac{3}{4} \times 5$  \_\_\_\_\_

(c)  $\frac{2}{5} \times \frac{1}{4}$  \_\_\_\_\_

(d)  $1\frac{2}{3} \times \frac{2}{5}$  \_\_\_\_\_

Means multiply

14. Marie practiced on the violin for  $1\frac{3}{4}$  hours. For  $\frac{1}{3}$  of that time she practiced scales. What fraction of an hour did she spend on scales?

15. Model the quotients.

(a)  $\frac{6}{10} \div \frac{2}{10} =$



(b)  $\frac{5}{8} \div \frac{1}{4} =$



16. Find each quotient.

(a)  $\frac{8}{10} \div \frac{2}{10} =$  \_\_\_\_\_

(b)  $\frac{2}{3} \div \frac{3}{4} =$

(c)  $3 \div \frac{3}{5} =$

(d)  $\frac{5}{8} \div 1\frac{1}{2} =$

17. Calculate - where  $a = \frac{2}{5}$ ,  $b = \frac{1}{2}$  and  $c = \frac{3}{4}$

(don't forget BEDMAS)

$a + b \times c$

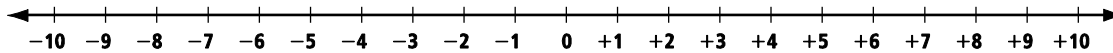
$b^2 + c$

$c(b - a)$

$ac \div b$

## INTEGERS

Use your number line to answer many of the following questions.



1. Use a suitable integer to show each of the following.

- (a) a gain of \$4 \_\_\_\_\_
- (b) 5 steps backwards \_\_\_\_\_
- (c) 2 m below sea level \_\_\_\_\_

2. Compare each pair of number using  $<$  or  $>$  to make each statement true.

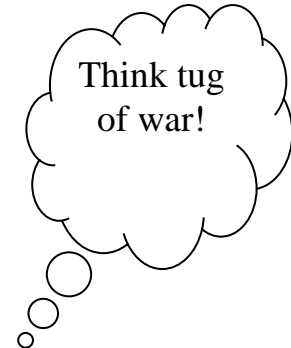
- (a)  $-15 \square -4$
- (b)  $-12 \square -23$
- (c)  $0 \square -12$

3. Arrange the following integers in order from **least** to **greatest**.

- (a) +5, 0, -3, -5, 12, -8
- (b) +4, -8, -1, -10, 15, -17

4. Find each sum.

- (a)  $+2 + (+4)$  \_\_\_\_\_
- (b)  $(+7) + (+3)$  \_\_\_\_\_
- (c)  $(-3) + (-4)$  \_\_\_\_\_
- (d)  $(-4) + (-6)$  \_\_\_\_\_
- (e)  $(-3) + (+4)$  \_\_\_\_\_
- (f)  $(-7) + (+11)$  \_\_\_\_\_
- (g)  $(+4) + (-6)$  \_\_\_\_\_
- (h)  $(-11) + (+5)$  \_\_\_\_\_
- (i)  $-20 + 17$  \_\_\_\_\_
- (j)  $15 + (-11) + (-16)$  \_\_\_\_\_
- (k)  $16 + -9 + 12 + -11 + -3$  \_\_\_\_\_
- (l)  $(-84) + 72 + (-10) + 12$  \_\_\_\_\_





5. Find each **difference**. Consider drawing a picture to show how you know your answer is correct (use chips, number line or changing the question to an addition question (tug of war question)).

(a)  $5 - 1$

(f)  $-10 - 8$

(b)  $2 - 6$

(g)  $-35 - 18$

(c)  $-3 - 8$

(h)  $52 - (-11)$

(d)  $4 - (-11)$

(i)  $-14 - 27$

(e)  $-3 - (-9)$

(j)  $16 - (-20) - 1 - (-13)$

6. On Monday, the price of gold was \$478. On the following Monday, the price of gold was \$475. How did the value of gold change, and by how much, in this one week? SHOW CALCULATION

Answer: \_\_\_\_\_

7. The height of Mount McArthur is 4344 m **above sea level**. The height of the Caspian Sea is 28 m **below sea level**. How much higher is Mount McArthur than the Caspian Sea? SHOW CALCULATION

Answer: \_\_\_\_\_

8. Calculate.

(a)  $(+6)(+5) =$  \_\_\_\_\_

(b)  $(+3)(-4) =$  \_\_\_\_\_

(c)  $(-8)(+6) =$  \_\_\_\_\_

(d)  $(-3)(-5) =$  \_\_\_\_\_

(e)  $(+12)(+7) =$  \_\_\_\_\_

(f)  $(-2)(5)(-3) =$  \_\_\_\_\_

(g)  $(-1)(10)(4)(2) =$  \_\_\_\_\_

(h)  $(-3)(-4)(-11)(-2)(0) =$  \_\_\_\_\_

9. Find each quotient.

(a)  $(+36) \div (+9)$

(c)  $(-24) \div (+8)$

(b)  $(+48) \div (-4)$

(g)  $(-36) \div (+9)$

(d)  $(+12) \div (-6)$

(f)  $(-40) \div (-8)$

(e)  $(+49) \div (-7)$

(h)  $(-20) \div (-5)$

Hint: this is a JUST do it! question

(i)

$$-24 \div (2) \div (-3) \quad \underline{\hspace{2cm}}$$

**10. Calculate. SHOW YOUR WORK**

$$6 \times 3 - (-2)$$

$$2 - (-6) \div 3$$

$$(-2)^3$$

$$-12 + 18 \div (-3) - 4$$

$$(-3) \times [(-4) + (-2)]$$

$$[(+6) + (-2)] \div (-4)$$

$$3^2 + (-4)^2$$

$$(-2) \times (-3)^2$$

**11. Fill in the chart:**

| Exponential form | Expanded form                  | Standard form |
|------------------|--------------------------------|---------------|
| $5^3$            |                                |               |
| $10^4$           |                                |               |
| $(-3)^5$         |                                |               |
| $(-2)^6$         |                                |               |
|                  | $3 \times 3 \times 3 \times 3$ |               |
|                  | $(-1)(-1)(-1)(-1)(-1)(-1)$     |               |

**12. Use the exponent laws to simplify the following:**

$$(2^4)(2^3) = \underline{\hspace{2cm}}$$

$$(3^6)(3^7)(3) = \underline{\hspace{2cm}}$$

$$(-2)^7 (-2)^9 = \underline{\hspace{2cm}}$$

$$5^8 \div 5^3 = \underline{\hspace{2cm}}$$

$$6^{12} \div 6^4 = \underline{\hspace{2cm}}$$

$$(-4)^5 \div (-4) = \underline{\hspace{2cm}}$$

$$2^9 \times 2^4 \div 2^5 = \underline{\hspace{2cm}}$$

$$10^{15} \div 10^5 \times 10^3 = \underline{\hspace{2cm}}$$

## EXPRESSIONS

1. Model and then simplify expressions that look like:

a)  $5n + 2 - 4n - 6 + n$

b)  $3(2n - 4)$

c)  $-2(4n + 3)$

Model:

Simplified:

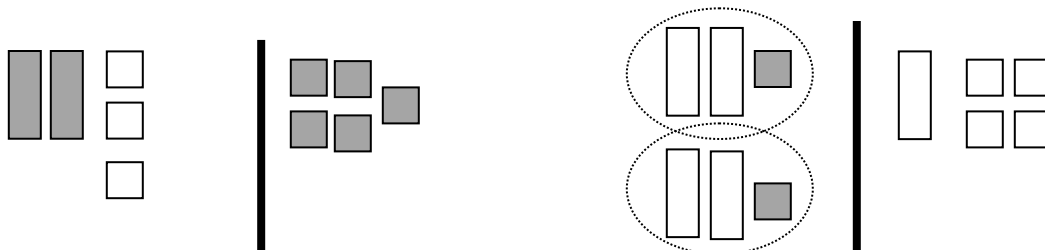
2. Evaluate expressions given the values for each of the variables.

a)  $8a + 2b - 9$   
where  $a = 3$  and  $b = -2$

b)  $4(2c - d)$   
where  $c = 5$  and  $d = -2$

c)  $8 - 2(n - m) + 3m$   
where  $n = 5$  and  $m = 9$

3. Identify what equation is illustrated with the following models:



5. Model the following equations:

a)  $n - 5 = 3$

b)  $8 - 2n = 2n$

c)  $-4n = 12$

d)  $2(3n - 1) = 5n$

6. Solve one step equations, showing all the appropriate algebraic work.

a)  $n - 2 = 10$

b)  $-12 = x + 8$

c)  $3n = -21$

d)  $-4n = 20$

\

Check your answers:

$$\begin{array}{c|c} n - 2 & 10 \end{array}$$

$$\begin{array}{c|c} -12 & x + 8 \end{array}$$

$$\begin{array}{c|c} 3n & -21 \end{array}$$

$$\begin{array}{c|c} -4n & 20 \end{array}$$

7. Solve two step equations, showing all the appropriate algebraic work.

a)  $2n + 3 = 21$

b)  $5 + 7n = -9$

c)  $8n - 10 = 6n$

d)  $-18 = 4n + 6$

Check your answers:

$$\begin{array}{c|c} 2n + 3 & 21 \end{array}$$

$$\begin{array}{c|c} & \end{array}$$

$$\begin{array}{c|c} & \end{array}$$

$$\begin{array}{c|c} & \end{array}$$

8. Solve multi-step equations, showing all the appropriate algebraic work.

a)  $4n - 2 = 7n + 10$

b)  $15 - 3n = 2n - 5$

c)  $3(4x + 6) = 18$